

International Congress and Expo on **Biofuels & Bioenergy**

August 25-27, 2015 Valencia, Spain

From wastewater to bioenergy: Nutrient and energy recovery with algae treatment

Zouhayr Arbib, Ignacio de Godos, Maikel Fernandez, Enrique Lara, Bernardo Llamas and Frank Rogalla
FCC Aqualia, Spain

Co-financed by the FP 7 programme of the EU Commission, the project “ENERGY.2010.3.4-1: Bio-fuels from algae” intends to demonstrate on large scale the sustainable production of bio-fuels based on low cost microalgae. The objective of the project is: (1) Implement on a 10 ha scale the full process chain, from growth to harvesting to processing; (2) Demonstrate sustainable algae culture ponds, integrated with biomass separation; (3) Processing for oil and other chemicals extraction, and downstream biofuel production and (4) Treat and reuse wastewater for nutrient recovery. In the FP7 All-GAS project the major fuel component will be biogas, derived from anaerobic digestion of algal biomass grown in high-rate algal ponds and from the anaerobic digestion of the raw wastewater in UASB reactors. CO₂ is separated from the biogas and recycled, together with a proportion of the carbon of the residual biomass after combustion together with supplements from local agricultural biomass. The overall process produces more than 150 L of biomethane per cubic meter of treated wastewater, and a net energy of 0.5 kWh th/m³. This process allows converting WWTPs from energy consumers to net producers, creating a new concept of process sustainability based on microalgae.

zouhayr.arbib@fcc.es

Notes: